

CLAIMS

1. A communication system comprising:

a plurality of remote terminal units, each including

a transmitter that transmits a transmission message to a satellite having a service area and

a high-gain antenna with a field of view that sweeps the service area during a sweep period, such that:

the transmitter is within the field of view for an illumination period that is substantially less than the sweep period, and

the transmission message has a message duration that is less than the illumination period; and,

a ground station that receives retransmission messages corresponding to the transmission message of at least a first terminal unit of the plurality of remote terminal units when the transmitter of the first terminal unit is within the field of view,

wherein

the transmitter of the first terminal unit is configured to repeatedly send the transmission message, based on a repeat parameter that differs from at least one other terminal unit of the plurality of remote terminal units.

2. The communication system of claim 1, wherein

the repeat parameter is further based on the sweep period.

3. The communication system of claim 1, wherein

the repeat parameter includes a random component.

4. A communication system comprising:

a plurality of remote terminal units, each including

a transmitter that transmits a transmission message to a satellite having a service area and a high-gain antenna with a field of view that sweeps the service area during a sweep period, such that:

the transmitter is within the field of view for an illumination period that is substantially less than the sweep period, and

the transmission message has a message duration that is less than the illumination period; and,

a ground station that receives retransmission messages corresponding to the transmission message of at least a first terminal unit of the plurality of remote terminal units when the transmitter of the first terminal unit is within the field of view,

wherein

a DSSS code of a plurality of DSSS codes is allocated to each of the plurality of remote terminal units, and

the transmitter of each of the plurality of remote terminal units is configured to transmit in accordance with the DSSS code allocated to the each of the plurality of remote terminal units.

5. The communication system of claim 4, wherein:

the transmitter of the first terminal unit is configured to transmit in accordance with a predetermined DSSS code, and

the transmitter of a second terminal unit of the plurality of remote terminal units is configured to also transmit in accordance with this predetermined DSSS code.

6. The communication system of claim 5, wherein each of the plurality of remote terminal units is configured to transmit in accordance with the predetermined DSSS code.

7. The communication system of claim 4, wherein:

each of a plurality of receiving units of the plurality of remote terminal units also includes a receiver that receives control messages that are transmitted from the ground station, and

5 the receiver of each of the plurality of receiving units includes
a DSSS correlator that demodulates the control messages in dependence upon a predetermined DSSS code associated with the each of the plurality of receiving units.

8. The communication system of claim 7, wherein the receiver of the each of the plurality of
10 receiving units includes

11 a controller, operably coupled to the DSSS correlator, that controls the DSSS correlator
12 in dependence upon a portion of the control messages.
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9. A communication device comprising:

a message source that generates an information message, and

a transmitter that communicates via a satellite having a service area and a high-gain antenna with a field of view that sweeps the service area during a sweep period and an

illumination period that is substantially less than the sweep period, wherein

the transmitter generates at least one transmission message that is based on the information message and has a message duration that is less than the illumination period, and

the transmitter repeatedly transmits the at least one transmission message based on a repeat parameter that distinguishes the transmitter from other transmitters that communicate via the satellite.

10. The communication device of claim 9, wherein

the repeat parameter is further based on a random process.

11. The communication device of claim 9, wherein

the repeat parameter is further based on the sweep period.

12. The communication device of claim 9, wherein

the transmitter also includes a DSSS modulator that produces the at least one transmission message based on a predetermined DSSS code.

13. A communication system comprising:

a base station that receives an information bandwidth that includes a plurality of transmission messages, the base station including: a plurality of DSSS correlators for demodulating at least two of the plurality of transmission

5 messages based on a predetermined DSSS code, each correlator of the plurality of DSSS correlators using the predetermined DSSS code,

wherein

a first message of the at least two of the plurality of transmission messages has a first start time, and an end time,

10 a second message of the at least two of the plurality of transmission messages has a second start time that is between the first start time and the end time,

at least one of the first start time and the second start time is independent of the base station, and

the base station is configured to distinguish between the first and second message based on a distinction between the first and second start times.

14. The communication system of claim 13, wherein

each correlator includes a seek mode and a locked-on mode, and
the base station further includes

20 a controller that selectively controls a first correlator of the plurality of DSSS correlators to enter the seek mode when a second correlator of the plurality of DSSS correlators enters the locked-on mode.

15. The communication system of claim 13, wherein

25 each of the plurality of transmission messages includes a source address that identifies one of a plurality of remote terminal units, and

the base station further includes a destination determinator that determines a destination address based on the source address.

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16. The communication system of claim 13, wherein

the base station further includes a router that forwards a demodulated message from each correlator of the plurality of correlators to a destination.

5 17. The communication system of claim 13, also including:

a plurality of remote terminal units,

each of the remote terminal units including a transmitter for transmitting an each of the plurality of transmission messages based on the predetermined DSSS code.

10 18. The communication system of claim 17, wherein

the transmitter of at least one of the remote terminal units is configured to repeat each of the plurality of transmission messages based on a repeat parameter that differs from another repeat parameter of at least one other transmitter of the remote terminal units.

15 19. The communication system of claim 17, wherein

transmissions from the remote terminal units to the base station are via a satellite having a high-gain antenna with a field of view that sweeps a service area of the satellite.

20. A communication system comprising:

a base station that transmits an RF bandwidth that includes a plurality of messages, the base station including:

a plurality of DSSS modulators that modulate at least two of the plurality of messages

5 based on a predetermined DSSS code, each modulator of the plurality of DSSS modulators using the predetermined DSSS code,

a controller that selectively controls each of the plurality of DSSS modulators based on a target address contained in each of the plurality of messages.

10 21. The communication system of claim 20, wherein transmissions from the base station to the remote terminal are via a satellite.

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22. A satellite system comprising:

a spacecraft control system that is configured to control a behavior of the satellite system,
a receiver that is configured to receive communications from a base station for
subsequent retransmission to a plurality of remote terminal units,

5 a transmitter that is configured to transmit communications from the plurality of remote
terminal units to the base station, and

a satellite terminal unit, operably coupled to the receiver, the transmitter, and the
spacecraft control system, that is configured to:

10 monitor the communications from the base station for messages that are addressed
to the spacecraft control system,

communicate the communications that are addressed to the spacecraft control
system to the spacecraft control system, and

communicate messages from the spacecraft control system to the base station via
the transmitter.

23. The satellite system of claim 22, wherein

the communications from the base station are modulated using a plurality of DSSS codes,
and

the satellite terminal unit includes

20 a DSSS demodulator that is configured to demodulate a predetermined DSSS
code of the plurality of DSSS codes, and

the communications that are addressed to the spacecraft control system are modulated
using the predetermined DSSS code.

25 24. The satellite system of claim 22, wherein

the communications from the remote terminal units are modulated using one or more
DSSS codes, and

the satellite terminal unit includes

30 a DSSS modulator that is configured to modulate the messages using a
predetermined DSSS code that differs from the one or more DSSS codes used by the remote
terminal units.

25. The satellite system of claim 22, wherein

the receiver is configured to provide the communications from the base station to the transmitter, and

the transmitter is further configured to

5 provide the subsequent retransmission of the communications from the base station to the remote terminal units.

26. The satellite system of claim 22, wherein

the receiver is further configured to:

10 receive the communications from the plurality of remote terminal units, and

provide the communications from the plurality of remote terminal units to the transmitter for transmission to the base station.

27. A method of providing communications, comprising:

deploying a satellite to provide communications within a service area,
sweeping the service area during a sweep period with a high-gain antenna that has a field
of view that is substantially smaller than the service area,

5 receiving communications from one or more transmitters that are within the field of view
for an illumination period that is substantially less than the sweep period,

wherein

the communications from the one or more transmitters include messages that each have a
message duration that is less than the illumination period, and

10 the one or more transmitters are configured to repeatedly send each transmission message
for a repeat duration that is greater than the illumination period.

28. The method of claim 27, wherein

each communication from the one or more transmitters is modulated using a predefined
15 DSSS code that is associated with each of the one or more transmitters.

29. The method of claim 28, wherein

each of the one or more transmitters is configured to use a common predefined DSSS
code.